

Board Review

Mitral Valve Disease and Cardiac Masses

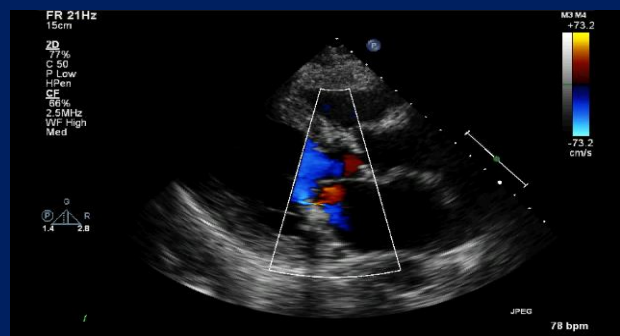
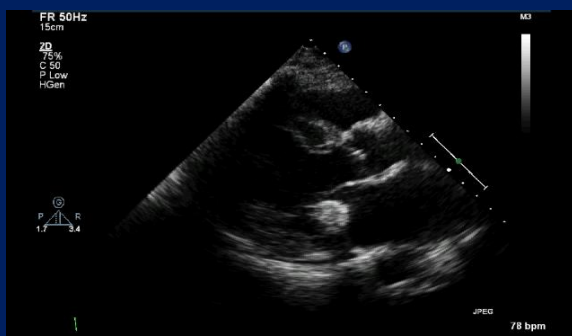
Dennis A. Tighe, MD, FASE
University of Massachusetts Medical School
Worcester, MA

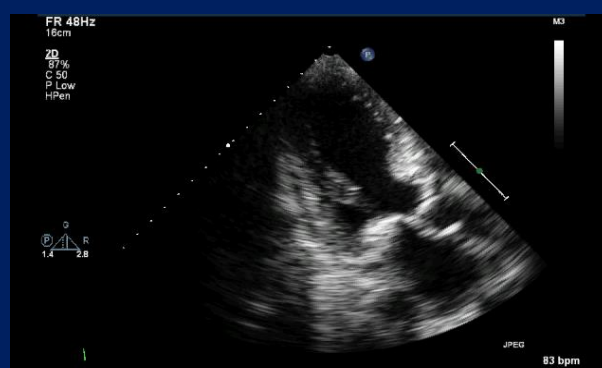
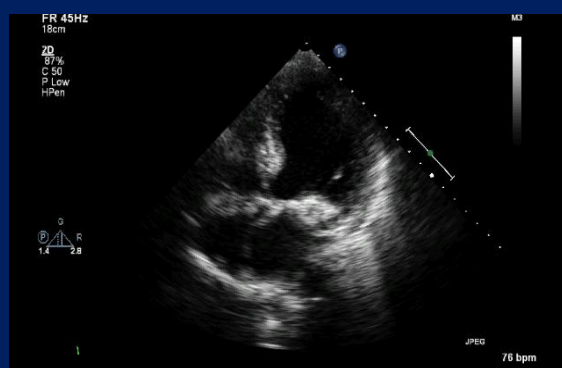
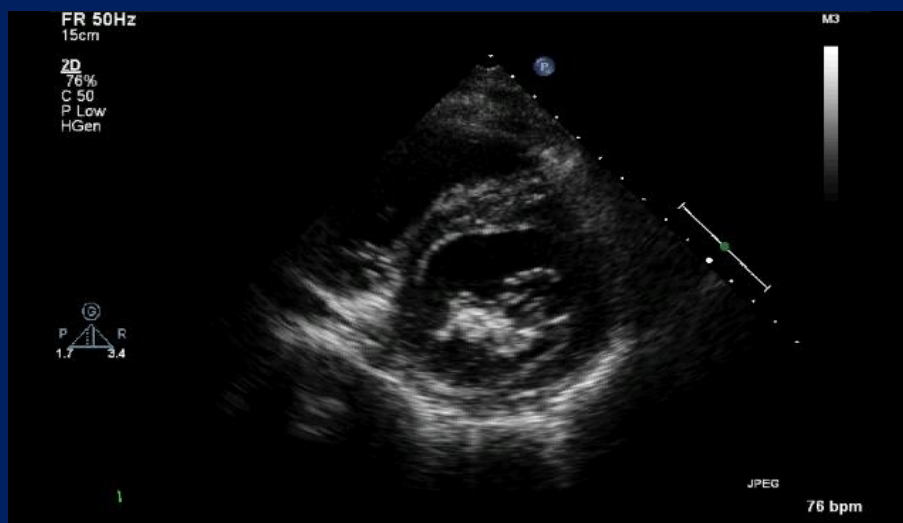
Case 1

- An 84-year old woman with Stage IV chronic kidney disease and systemic hypertension presents to an outside hospital with worsening shortness of breath
 - Physical examination and chest radiography were consistent with pulmonary edema
 - Diuretics were given
 - Transthoracic echocardiography was performed

Which of the following entities constitutes the most likely etiology for the finding shown?

- 1. Left atrial myxoma
- 2. Intra-cavitary thrombus
- 3. Infective endocarditis
- 4. Caseous calcification
- 5. Papillary fibroelastoma



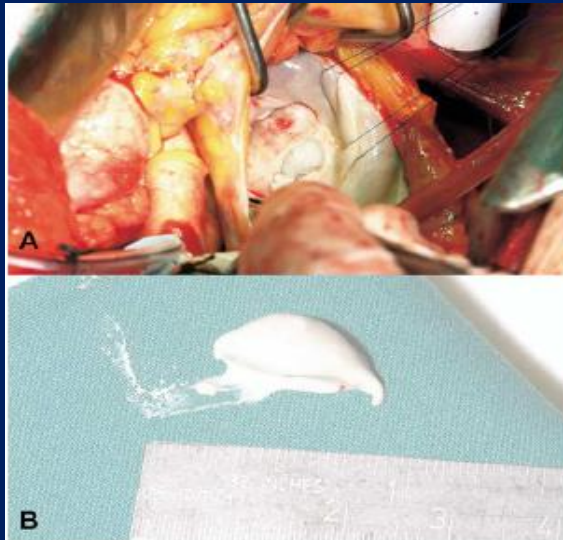


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Caseous Calcification of the Mitral Annulus

- Relatively rare
 - Estimated prevalence of 0.07%
- Annular-based mass with echoluscencies
 - Putty-like admixture of fatty acids, cholesterol, and calcium
 - "Toothpaste" tumor
 - Rounded
 - Smooth borders
- Posterior location
- Associated conditions
 - Elderly
 - HTN
 - Women
- Natural history appears benign
 - Some cases may regress spontaneously
 - Inflow obstruction
- Differential diagnosis
 - Abscess
 - Tumors
 - Thrombus



Alkadhi H et al. J Thorac Cardiovasc Surg 2005;129:1438.

Which of the following primary cardiac tumors is most likely to involve the cardiac valves ?

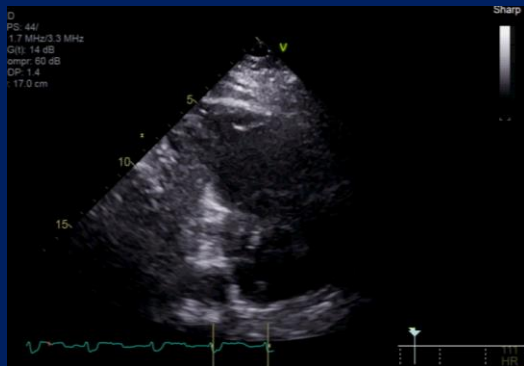
1. Cardiac myxoma
2. Sarcoma
3. Rhabdomyoma
4. Papillary fibroelastoma**

Case 2

- A 72-year-old with peripheral neuropathy and HTN presents to an OSH with pain in the left leg. He was found to be in atrial fibrillation.
- A transthoracic echocardiogram was obtained.
- The patient was transferred to our institution on the basis of the echo findings.

Which of the following choices is the most likely etiology for the observed right atrial mass?

- 1. Chiari complex
- 2. Thrombus
- 3. Eustachian valve
- 4. Atrial myxoma
- 5. Angiosarcoma



RV-inflow



A4c zoom

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- 1. Chiari complex
- 2. Thrombus**
- 3. Eustachian valve
- 4. Atrial myxoma
- 5. Angiosarcoma

Choice Explanations

- **2. Thrombus is the correct answer.**
 - This highly mobile mass in the RA has a characteristic appearance, resembling that of a cast of a deep vein. This finding is highly suggestive of a thrombus in transit. Such a right heart thrombus is noted in a minority of patients who suffer pulmonary embolism. Observed mortality with this finding is increased.
- 1. While a highly mobile RA mass is shown, the thickened, irregular serpentine appearance of the mass is not consistent with the typical characteristics of a Chiari complex (thin, filamentous).
- 3. The Eustachian valve, “valve of the IVC,” can be quite prominent and protrude in the RA cavity. It is not a highly mobile structure however.
- 4. Atrial myxoma, while most commonly seen in the LA, may be observed in the RA in up to 10-15% of cases. An RA myxoma typically arises from the area of the fossa ovalis via a stalk. In this case, no clear attachment point within the cavity is demonstrated.
- 5. Angiosarcoma typically involves the RA/right AV groove. Diffuse infiltration of the RA free wall along is usually observed. Tumor protrusion into the cavity may be seen. An associated pericardial effusion is a common finding.

Which of the following is the most commonly encountered intra-cardiac mass lesion?

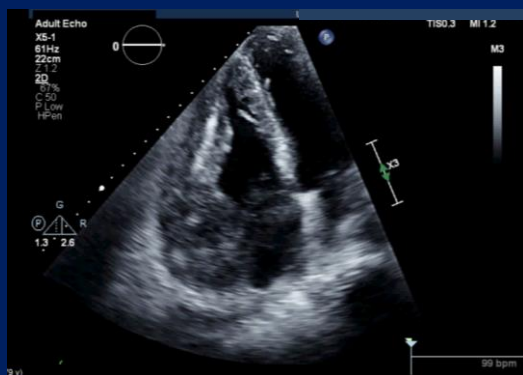
1. Metastatic (secondary) tumor
2. Atrial myxoma
3. Papillary fibroelastoma
4. Osteogenic sarcoma
5. Intra-cardiac thrombus**

Case 3

- A 79-year-old man with PMR/giant cell arteritis presents to hospital with fever, fatigue, cough, shortness of breath, nausea, dysphagia, and weight loss.
- CXR showed an “enlarged heart.” ECG showed sinus tachycardia and presumed new T-wave inversions.
- A transthoracic echocardiogram is obtained.

Which of the following choices best explains the findings observed on echocardiography?

- 1. Osteosarcoma
- 2. Infective endocarditis
- 3. Lymphoma
- 4. Myocardial rupture
- 5. Renal cell carcinoma



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Choice Explanations

- **3. Lymphoma is the correct answer.**
 - Echocardiography demonstrates tumor mass diffusely invading the heart (right > left). Pericardial and extra-cardiac involvement is present. The patient is immunocompromised and complains of “B-symptoms.” The clinical history and echo findings are highly suggestive of lymphoma.
- 1. Osteosarcoma characteristically involves the left atrium, which is not demonstrated on this echocardiogram. Cardiac involvement by sarcomas most commonly occurs among those 30-50 years old.
- 2. Infective endocarditis may present with similar symptoms as did this patient. No definite valvular involvement was shown and while aortic root thickening may indicate the presence of an abscess, the diffuse nature of the cardiac infiltration is unlikely to be due to infective endocarditis.
- 4. Myocardial rupture can be a subacute complication of MI and may present with evidence of intra-pericardial thrombus. In this case, the echo does show intra-pericardial echodensity, however the diffuse, ill-defined infiltrative involvement of the heart is not consistent with recent MI and myocardial rupture.
- 5. Renal cell carcinoma is the most frequent malignant etiology of an IVC mass extending into the right heart. On echocardiography it is often first displayed as a mobile mass within the cavity of the RA; subsequent investigation of the IVC demonstrates its pathway of entry to the right heart. It does not typically infiltrate the heart as is demonstrated in this case.

Which of the following tumor types exhibits the highest propensity for cardiac metastasis?

1. Malignant melanoma**
2. Osteogenic sarcoma
3. Bronchogenic cancer
4. Breast cancer
5. Hypernephroma